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ABSTRACT

This research project studied the relationship between teachers' thinking and action, specifically, teachers' implicit theories in the subfield of evaluation. Particular focus was upon the way teachers generate their theories about teaching, the structure and content of such theories, and their influence on decisions and intructional practices. The paper presents some of the elements formulated by a Spanish elementary/middle school mathematics teacher, which make up a theory on the evaluation of teaching. This theory does not reflect a set of scientifically contrasted propositions, but rather a set of experiences confirmed by professional practice. The subjective character of its statements represents the different reflections during the teacher's daily activity in the classroom, thus being subject to a continuous evolution. The structure, which integrates it, is made up of isolated pieces, implicit in the teacher's thinking, which are reached through successive processes of classification and contrast. (JD)

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AN ETHNOGRAPHIC STUDY OF TEACHERS' IMPLICIT THEORIES ON EVALUATION

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AN ETHNOGRAPHIC STUDY OF TEACHERS' IMPLICIT THEORIES ON EVALUATION

In a review of the past ten years of conceptual development on teachers' thought processes, Clark(1986) admits a transference of the center of teachers' cognitive activity: decision making --the predominant pattern in this research context-- is currently considered as just another of the teacher's diverse activities in the service of meaning-building. Clark's work, supported by that Schön(1983), describes a conception of the teacher as a thoughtful professional who, like doctor, architect or lawyer, needs a deep understanding of his domain and the variables interacting within it, in order to ingeniously interpret, adapt and apply it to particular situations which arise in his profession. "The teacher of 1985 is a constructivist who continually builds, elaborates, and tests his or her personal theory of the world"(1). In this sense, Copa(1984) speaks of teachers as 'theorymakers' who act as bonds between thinking and action. "Theories were defined as the schema by which teachers made sense and acted upon aspects of their classrooms"(2).

This research project aims to study the relationship between thinking and action, reconstructing what Argyris and Schön(1978) call 'espoused theory' and 'theory-in-use', which the National Institute of Education (Gage,1975) and Clark and Yinger(1979) define as 'implicit theories', and Bromme(1984) and Huber y Mandl(1978) distinguish as 'subjective theories'. These theories --to which we refer throughout this paper as implicit-- are of fundamental importance in human perception (Nisbett and Ross,1980) within the psychological contextualization of planning, of interactive thinking, and of teachers attributions (Clark and Peterson,1986), and the description of the way knowledge is configured and utilized, in teachers' thinking and in action (Yinger,1986). Specifically, this research project is concerned with studying teachers' implicit

theories in the sub-field of evaluation, where more than a hundred posible studies have been identified concerning interest in teachers' thought processes (Fernández Pérez,1986).

1. Teachers' Implicit Theories

Theorization,or the construction of a system of reationships between a set of units such as facts, concepts, variables, is a basic aspect of human behavior (Snow, 1973).It is perhaps man's highest level of thinking as he can predict his future action according to a construction whose efficiency has previously been contrasted." A theory is a way of making sense of a disturbing situation so as to allow us most effectively to bring to bear our repertoire of habits, and even more important,to modify habits or discard them altogether,replacing them by new ones as the situation demands."(3).

This decidedly popular view of theorization has, however some correlation with certain general approaches within the psychology of personality and social psychology; specifically with Heider's work (1958) on reconstruction of the psychology of the man in the street, and with Kelly's theory of Personal Constructs (1955).Kelly adopts the metaphor of the "scientist-man" and wonders:

> ...might not the individual man; each in his own personal way, assume more of the stature of a scientist, ever seeking to predict and control the course of events with which he is involved? Would he not have his theories, test his hypotheses, and weight his experimental evidence? (4).

As Pope (1985) points out, anyone in his attempt to predict events follows a theorization process similar to that of the scientist to generate theory.In other words, he questions a reality, explore it, formulates an explanation, revises it and even replaces it in the light of errors found in his experiment.

This "activist" view of theorization is not far off from the so-called "new image of Science" (Brown, 1977) in which the research in progress, and not the accepted results, constitute the nucleus of scientific activity.In this conception, developed from the 1950's on, with outstanding work by Handson (1958),

Polanyi (1958), Toulmin (1961),Kuhn (1962), and Feyerabend (1962), the scientist is shown in deep thought about his observations, establishing generalizations based on the data, building systems of concepts and relationships, and developing crucial experiments to test the systems created and thus change the theoretical framework, giving rise to events Kuhn calls "scientific revolutions"."Most scientific research, according to this conception consists of a persistent attempt to interpret nature in terms of a presupposed theoretical framework" (5).

Analysis of the logical-symbolic structure of theories, the main concern of scientific research up until the first half of the twentieth century, was thus surmounted by a constant attempt to generate theoretical frameworks from which to facilite the establishment of problems, and determine the validity of the findings contributed for solving them."The history of western science shows that theory development is the best and most efficient means of advancing knowledge and control of natural phenomena"(6).

Education, and, of course,reserch on teaching, has not remained insolated from this attempt, and has held the generation and contrast of theories among its goals."As research findings have accumulated, there has been an increasing need to organize what has been learned into theoretical form"(7).Thus, Crocker (1986) shows that in the last two decades, research on education, while it has contributed much understanding on how instructional processes are related to student results, has generated repeated demands and attempts to develop a theory of teaching (Gage,1963; Snow, 1973;Dunkin and Biddle,1974; Winne and Marx,1977; Doyle, 1978).Some of these theories would come to take the form of popular explanations of the events, while others would have a more formal development (Biddle and Anderson,1986).

Although formal systems of this type begin to appear in research on teaching, the theories which orient research and practice remain largely implicit, unformulated and hidden.And theoretical work still does not seem to be researchers' main activity in the field of teaching (Gage, 1975).

Along a different line, analyzing the relationship between theories and their application to teaching practice, Gordon (1984) considers that theories --above all, those derived from behavioral science -- have not been created for teachers to use, as many of their concepts are irrelevant to teaching. In this sense, it is possible that teachers could learn the prescriptions derived from such theories, and not feel the need to know their sources.

However, in spite of the need to generate theories on teaching and practical recommendations derived from such theories, there is one true fact, which is that teachers have to act daily in their classes (Huber and Mandl, 1980). So under the conditions of the daily need to teach, the intellectual requirements which would imply the total mastery of the theoretical foundation supporting their activity and the psycho-social forces which surround their work, teachers build and use their own theories instead of the rational patterns set in training programs (Clark and Yinger, 1979; Huber and Mandl,1980; Dreyfus, 1986).

These theories, which have been studied together with concepts such as "subjective", "implicit", "native", "private", etc., represent teachers' systems of notions, which are structurally comparable to scientific theories (Huber and Mandl, 1982)."A survey of research on teacher cognitions shows that these subjective theoretical systems are conceived of as serving the same purposes for teachers and their everyday actions as scientific theories do for researches.(8).Their experimental components, often translated into metaphoric form, seem to provide teachers with useful elements when it comes to predicting or explaining the student's conduct, and choosing his own instructional straegies.

The concern for the way teachers generate their theories about teaching, the structure and content of such theories, and their influence on decisions and instructional practice, has become one of the outstanding lines of research on teaching.This concern is not far from a more universal model, centered around the study of teachers' thinking during the practice and interactive phases of teaching, and on their judgements and attributions about students (Shavelson and Stern, 1981; Clark

and Peterson, 1986; Shulman, 1986).

In spite of its importance, research on teachers' theories is the most recent approach (Hasselgren, 1984) and the one to which the least attention has been paid, in studies on teacher thinking (Munby,1982). Besides, as this author tells us, when studies have been attempted along this line of research, they have generally failed in the selection of the methodological focus, or in the way of interpreting the results. "The central task of the research is to assist the teacher in moving from an implicity held and private belief system to an explicit description of his or her cognitive frame of reference" (9). Thus, we understand the necessity for a type of research that makes teachers' cognitive structures "explicit and visible" as a way of better understanding their thinking and actions, and the relationships that take place between them.

Finally, studies on implicit theories demonstrate an apparent sensitivity to the type of methods used by the researchers, which suggests --according to Nespor and others, 1984 -- that the search for such theories, for the sake of the theories alone, may be a useless enterprise :"Each sample of teachers, each new scholastic context and each new methodological procedure probably gives rise to a different taxonomy or list of beliefs or principles " (10).For these authors, there are two possible answers to the problem: the first one is explicitly to define points of research on the study of teachers' theories centered on specific educational areas, such as, for example, teachers' views of students or of the curriculum; and the second answer is to contributed more information on the characteristics of teachers and of their environment.

Realizing this double necessity, the research project we present is concerned with implicit theories on evaluation, an area we feel to be rich in possibilities of inquiry, and of greatest importance for educational practice.

> Descriptive scientific research on teacher thinking and decision-making in the field of educational evaluation constitutes the essential condition for any rational attempt at techonological prescriptions, with a view to improving the evaluation used in the schools" (11)

Study on this subject, with the support of representative case analyses, may facilitate the interpretation of individual interactions, actions and verbal statements, and generate theoretical patterns that relate diverse pieces based on those sources (Copa, 1984).

> "Ethnography is an explicit methodology designed for finding out both the explicit and tacit knowledge familiar to the most experienced members of a culture(...) the ethnographer will be able to talk about and communicate the knowledge in a way the natives cannot"(12).

2. Procedure

The case study developed in this research project, although based on a concrete model --the Developmental Research Sequence (D.R.S.) Method -- has more or less arisen as the fruit of a thought process induced by fieldwork, and by the understanding of certain theoretical foundations.In this sense, we can say our process of inquiry has been deliberately guided by certain concepts, more than oriented by a set of prototype techniques (Erickson, 1984).

The way we have proceeded is based on theoretical assumptions (so teachers' cognitive processes are influenced by the scholastic contexts in which they are generated, any event may be an indication that leads us to a more comprehensive view of teachers' implicit theories, and field work should be characterized by a constant dialogue between induction and deduction) and certain data gathering techniques (participating observation, in depth interviews and analysis of documents). We believe that both --these assumptions and these techniques -- provide the parameters, instruments,and general guidelines on how to proceed (Bogdan and Biklen, 1982; Goetz and Lecompte, 1984).

Based on these supports, our research model is characterized by the promotion of developing fieldwork which respects the time dimension in the evolution of teachers' concepts and the natural frameworks within which their

cognitive activity is generated, by giving priority to ethnographical arguments on the criteria for random selection of the subjects, or by adopting a certain naivety as a route to a more careful compilation of what happens in and outside of class. This model also follows a holistic perspective which involves us in the study of teachers' implicit theories within the structure and the daily life of the school, and therefore allows us to reach teachers' viewpoints as a primary prerequisite for understanding their conceptual world, prolonging our residence in the field as a strategy for capturing the immediacy of evaluation events.

All of these characteristics made us conceive a flexible design of research; in other words, one that would be able to adapt to the imponderable aspects of the fieldwork, and open, in the sense of being ready to accept whatever modifications should arise out of the research process. Thus, for example, our study was not linearly sequenced by stages arranged in time, but rather there was a constant feedback between some stages and other.

> "In ethnography (...)you learn something ("collect some data"),then you try to make sense out of it ("analysis"),then you go back and see if the interpretation makes sense in light of new experience ("collect more data"), then you refine your interpretation ("more analysis"),and so on. The process is dialectic, not linear"(13)

Our selection of the subject, with whom we maintained a relationship based on "mutual effort" (Woods,1985), was initiated with the appropriate limits, dimensions, and attributes of the teaching population who were going through a reform process in a Seville (Spain) public school. The data basis on the attributes of the initial group of the study was put together following an informal process that some authors call "shagging around" (Goetz and Lecompte,1984),and others term "Mapping" (Schatzman and Strauss, 1973), wich meant informal meetings with the director, the teacher, and other people related to that school; ethnographical interviews with each of

the sixth eighth grade teachers at the school; studying the project presented by those teachers to participate in the process of innovation and analysis of our impressions collected in a journal.

We dealt with this information on the basis of a format that included the following criteria to determine the most appropriate teacher model (the "bell-weather" case) for the characteristics of the study: years of experience at the school as a teacher of the grade level and/or subject matter he was teaching at that time; degree of routine in the tasks related to the evaluation of teaching; the process he had followed to develop his practical knowledge; the ability to minutely describe the evaluation process used; the level of use of "original" language about the evaluation and the ability to generate heuristic terms and models; the level of concern for the evaluation process; the degree to which his practical knowledge influenced evaluation in his conduct; his free time; the interest he showed in the project; the appreciation his colleagues and I myself had of him.

The teacher we selected had been teaching for eight years, four of which had been spent at the school where we carried out our study. He taught eighth grade Mathematics and also gave one workshop on Accounting and another one on Resources. He was a deeply encultured person within his teaching environment, he knew his students well and was an expert on evaluation situations.In this sense he even commented to me, "It is no problem for me to evaluate these children. I know them; I know exactly what they do".His professional experience has led him to the firm decision not to fail any of his students, nor make them repeat the year.And I have been able to confirm that his evaluation practice is very much influenced by his conception of teaching and by his political ideology.From the word go, he expressed his interest in our project, and never once objected in any way to participating in it.

Data was collected though in-depth interviews, supported by observations made in and outside of class,

documents and informal conversations with the teacher.During the development of our research, we sought not to create barriers with our respective roles in the study."The relationship (...) has to be established on a basis which allows for the transcendence of roles and the dissolution of fronts".(14). Nor could we previously select all the working methods, as the importance the teacher gave the meanings and the different contexts in which these methods were generated only came out over a period of time (Goetz and Lecompte, 1984).

The process of gathering, coding and analyzing the data was developed following the "Developmental Research Sequence (D.R.S.) Method" elaborated by Spradley (1979).This method, already used in diverse research projects on teachers' cognitive processes (Borko et al, 1983; Strahan, 1983; Oberg, 1986; Regan, 1986) in some of their phases, proposes performing all the stages of a study simultaneously, in a dialectical process in which access to one particular stage does not involve abandoning other ones which had been initiated. In this way, our strategies were based on the very reactions we perceived in the teacher and our research questions intensified as we became more aware of the cultural framework we were studying, and of the meanings the teacher attributed to evaluation phenomena. "Data collection and analysis are inextricably linked in ethnography because the ethnographer may not know what questions to ask until initial impressions and perceptions have been analyzed and tentative conclusions have been formulated" (15).

Data gathering was based on three different types of interviews, each of which was broken down into a similar number of ethnographical questions: descriptive questions, structural questions and questions of contrast. The information collected, as shown in Figure 1, was studied through four types of analysis: analysis of the domain, taxonomic analysis, componential analysis and theme analysis.

FIGURE 1

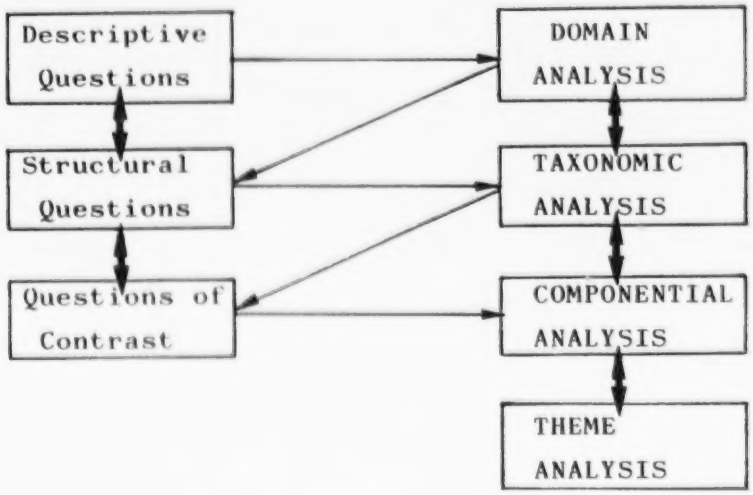

Figure 1. Correspondence between data collection and analysis by the D.R.S. Method.

3. Finding

One of the fundamental assumptions maintained by the teacher in our study is that the best evaluation is not to evaluate. This rejection of evaluation appears justified if we consider that the educational administration requires him to make a form of assessment which serves as a means of maintaining the scholastic status quo through the fear of failure arqused in the student. And as this form of evaluation obliges him to become a bureaucrat who simply confirms the apprentices' performance under his tutelage, it under no circumstances represents the real use of his taching to the best advantage.

In spite of everthing, other processes of assessment take place daily in his class, and information he obtains from these, more than informing the administration of scholastic achievements, serves the purpose of finding solutions to students' learning problems.

Thus, two parallel systems of evaluation coexist: that which the administration proposes and that which the teacher effectively introduces in his class.

Evaluation As a Means of Maintaining Discipline.

For the teacher of our study, evaluation, on most occasions is a resource used for controlling students' work and conduct in class. Through failure, reinforced by parental punishment and the rejection by the social surroundings, the teacher introduces an element of fear in the student that allows him to maintain discipline (the status quo: silence and/or participation in the tasks, assumption of the need to learn certain contents and develop certain skills, participation in values which promote individualism or helping a fellow student, etc.) If the teacher cannot count on the resource of the "pass or fail", his possibilities of maintaining that state of fact recognized by authority, or implicity imposed on scholastic tradition, are diminished.

> ...Today I am glad even my own assessments are incomplete.But of course that makes me uneasy (...) sometimes, you see that working with the other system/ doing very traditional testing; exams or ten questions with four parts each/, you apparently achieved results of reasonably interesting academic levels.

As students become more contrary (in the Spanish educational system, students can participate in school management from the sixth grade on), marking grades becomes more thorough and the whole process of suggestion, somewhat masked at earlier levels, is now maximized. As an example we need only remember the importance grades take on at the end of the eighth grade (for getting into High School) and throughout High School, or from ages 14 to 18,approximately.

The Teacher As an Administrator.

The teacher clearly distinguishes the things he has to do in relation with evaluation --and to which he is openly opposed-- from those which are not obligatory but are necessary to improve his teaching.

This teacher is obliged by the educational administration to fulfill certain requirements in the evaluation of his students. These requirements are expressed,at the end of the school year, in the presentation of a Final Report he must

give the school, and in assigning his students certain grades in their Scholastic Records (transcripts).

For him, these requirements are purely forms. The information he contributes to the Report or the Scholastic Record are filed away in the administration and so have no repercussion whatsoever on improving teaching, or at least not in the classrooms from which it has been extracted. Thus, the teacher feels like an administrator who makes a final balance of a school year, and determines which students have taken adequate advantage of the scholastic opportunity.

-Mathematics

> The program proposed for the second term -- fundamentally based on Algebra-- has been completed, as well as functions and proportionality.
>
> As a general analysis we should indicate that part of the class has not been able to sufficiently assimilate the new concept of using numbers and letters in abstract operations.

The educational administration does not oblige him to hold individual meetings with the parents each term,to adapt contents to the student's development, nor to achieve the highest level of progress possible from each student. However, he does all these things.He feels it is necessary for the improvement of his teaching, and he therefore makes it an essential element of his activity, considering it more important than the administration's requirements. This facet of his work, which covers the development of the entire school year, does not attract the attention of the administration, which is only concerned with the teacher's working his full schedule of classes and his year-end grading.

Teacher Opposition.

This teacher, who believes his role is to teach, and not to pass or fail,feels antagonistic to a form of

evaluation which leads only to a piece of administrative data. For him, it would be best not to perform this type of evaluation. He does not see the need for doing it, as it only creates artificial situations that distort the dynamics of his class and contributes no more information than that which he already possesses, through his daily contact with the students in natural class situations.

He believes it would not have been necesary --or at least not for teachers -- to give the tests which he has sometimes applied to appraise the student's progress, and whose results appear reflected on his Scholastic Record. It would be a different matter if anoutside evaluator wanted to find out about certain aspects of the students, or test teaching efficiency, but in this case, rather than evaluating the students, it would be an evaluation of the teacher.

When he is obliged to give the students grades, this teacher develops attitudes and behaviour which are sometimes openly opposed to administrative requirements.Two examples of this vetoing attitude are his rejection of failing students, thus making them repeat the year.

This teacher believes that giving students a failing grade only leads to two things: the student's repetition of the year, and the mark of failure on his Scholastic Record.For him, the student who fails does not study more for being failed, or at least he does not learn more. The failing grade does, however, tend to incite a negative response on the part of parents, fellow students, and the student's social surroundings. At the lower, obligatory level, such as Basic General Education in the Spanish educational system (First through Eighth Grades) he feels it is not necessary to certify whether the student is better or worse. It would be enough to register that he had been through that educational level.It is absurd to state, in an official register signed by a delegate and an inspector, which child is clever and which one is stupid.

The child who repeats is one who will never recover,

who is retired and uprooted in class, because he has been cut off from his fellow students; separated from his natural group of friends.He cannot talk to the other students and ends up isolated. When a student is made to repeat, he understands it is in order to pass him a year later or, if he does not manage to obtain the certificate of studies, to block his access to a job or to future training.

> Yesterday, a new girl came to school, who was repeating sixth grade (...) and the girl was as tall as me, with a breast like this.How can we put this girl in the 6th grade? Besides, the girl was already crying when they told her she was going into the 6th grade, before she even met her classmates the girl was already crying...and I told them to send her to my 7th grade class or my 8th grade class if they wanted, but not with these children here.

In this context, the teacher feels the individual's personal development is more important than the level of knowledge he acquires at a given educational level, and the failing grade only deprives the student of the knowledge of his maturity.

Two Parallel Systems of Educational Evaluation.

The educational administration requirements, and this teacher's need to improve his students' learning determine the coexistence in his class of two parallel systems of evaluation. What both systems seek, and the procedures used to achieve this, reflect two very different positions on evaluation.

This teacher openly distinguishes at least two types of evaluation: that which teachers do for the administration, which he calls "joint class evaluations", and that which forms a part of his daily activity, integrated as an element to achieve the best results of teaching, which he calls "continuous evaluation".

Figure 2 Here

The joint clas evaluation characterized by not contributing anything to the teacher's professional activity, only serves to reflect, in a report, the general class level of learning with respect to a specific subject, or to obtain numerical notations to be made on the Scholastic Record or the Final Report. More than an individual value, this type of evaluation has a statistical value (for example, to know the average "passes" and "fails"; if the class is going well or poorly, etc.) that comes from the type of tests applied.

Figure 3 Here

As the teacher comes to know the children, he can manipulate testing, by selecting certain type of questions designed to obtain percentages which only confirm his expectations. Thus, the results are facts he knows beforehand with no need for performance curves to show when a child is doing well, badly, or under average, or which of them has problems in class.

In the joint class evaluation, certain aspects of the student are evaluated: the effort he exerts in performing a task, the interest he shows, his skill in aspects such as calculation, his mental agility, his degree of abstraction, the errors he makes, his attitudes towards certain subject matter, or his maturity.To achieve this, the teacher uses term tests, tests after each theme, and scales for measuring attitude. This is an evaluation carried out within the physical space of the class, in which he follows a more or less similar process to this one: the teacher gives a test which more or less follows what he is teaching; from the results he obtains a curve of scores within each class or grade level (6th, 7th or 8th), and of the major themes studied during the term. Then he elaborates a scale for measuring attitudes, and after applying this scale, he discusses the interest and effort developed with each student, prepares effort and interest tables by grade level and subject matter, comments on the results with parents, who usually con-

tribute solutions for students whose performance is not up to standard, and conclusions are drawn from which teacher issues the Report.

Figure 4 Here

Continous evaluation, on the other hand, strengthens children's learning, as it happens at the same time as this learning is being produced. Thus, the information the teacher obtains from it bears almost immediately on the instructional process. This information has to do, fundamentally, with the student, but also makes reference to aspects related to the parents, class and group or subgroups in it, the instructional method, the rhythm and progress of learning, or the teacher himself. In order to accomplish this evaluation, the teacher uses exercises, observation of the children's problems, interviews with the parents, and he even makes use of little conversations with the students:

> I walk around and come to Lolo's desk, and Lolo is showing the teacher his exercise at that moment. The latter, after looking it over, tells the child Come on,Lolo! Is the area of a rectangle the base plus the height?
>
> From Lolo's table, the teacher goes down to the third row where he takes a speak at Sylvia's notebook. 'Come on Sylvia! If I tell you a rectangle, it is not the base of a triangle!' (laughter from the students).
>
> He stays on the same row and reaches Marta's desk, sees her notebook, and when he gets to Susana, says --so that the first rows can hear--'The reasoning Marta uses is the same as this other one: first you have two unknowns, then you take one way.

This type of evaluation may be made inside or outside of class and at any moment of interaction between teacher and students. The teacher first decides what he is going to teach, though not the strategies by which to do so; he does not structure

these until he comes to know the students.When the students arrive, the first thing he tries to do is speak to them at any moment or place (in class, on field trips...) and tries to have parents participate in this initial contact. During this period, he usually takes notes which he will contrast later throughout the year. Thus, he sees what they are like; which of them go together; which ones can help which others; to whom he can direct his basic Math teaching and how to do it; which students need him to get over their shyness, or simply to find out what they know. This is the time for revising the entire process and preparing a plan of action for the rest of the school year.

Throughout the year, the teacher carries out a continuous process of evaluation, being on top of students to see what they are doing and to make sure they discover things. In this way, the yeacher checks his students' rhythm of learning, and adapts his working program or plan to this rhythm as he goes along. It is a continuous process of dealing with questions that come up every day in class, to try and give them adequate instructional answers.

The information the teacher obtains with this type of evaluation does not show up, in its full extension, in scholastic grades, nor on the Final Report of the year; rather, the teacher uses it to improve his instruction and to help the student at the same time as he detects any difficulty in his learning process.

4. Discussion.

This paper has presented some of the elements formulated by a Spanish Elementary-Middle School teacher, which make up a theory on the evaluation of teaching. This theory does not reflect a set of scientifically contrasted propositions, but rather a set of experiences confirmed by professional practice. The subjective character of its statements represents different reflections during his daily activity in class, thus being subject to a continuous evolution (García, 1986). And the structure which integrates it is made up of isolated pieces, implicit in the teacher's thinking, and which can only be

reached through successive processes of classification and contrast.

Teachers seem to count more on strategies of action, instructional resources, and accumulated professional experiences, than on developed theories. Only after communicating those elements to the researcher, and after the revision which follows this communication, are they able to organize all their practical knowledge in their minds and give it the form of a theory. In this sense, the researcher, with his constant questioning, does no more than provoke a process of reflection, on the part of the teacher, about the hidden structure behind his thoughts on teaching. Without this inquiry, it is difficult to believe teachers could manage to articulate their theories, as a large part of them do not even have the opportunity to communicate their knowledge.

For the development of their instructional activity, teachers are constantly evaluating in their classes.The data from this appraisal, obtained through more or less informal procedures, are generally implicit in the teacher's thinking while he works with the students, and little of that data is reflected on their report cards.

We note some matters which seem essential for promoting any form of scholastic innovation: finding out the elements on which teachers' evaluation is based, and registering which of them determine the modification of a working plan, or the development of alternative instructional sequences. To ignore these matters, and with them, their potencial theoretical proposats, could mean turning our backs on scholastic reality.

Footnotes

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FIGURE 2

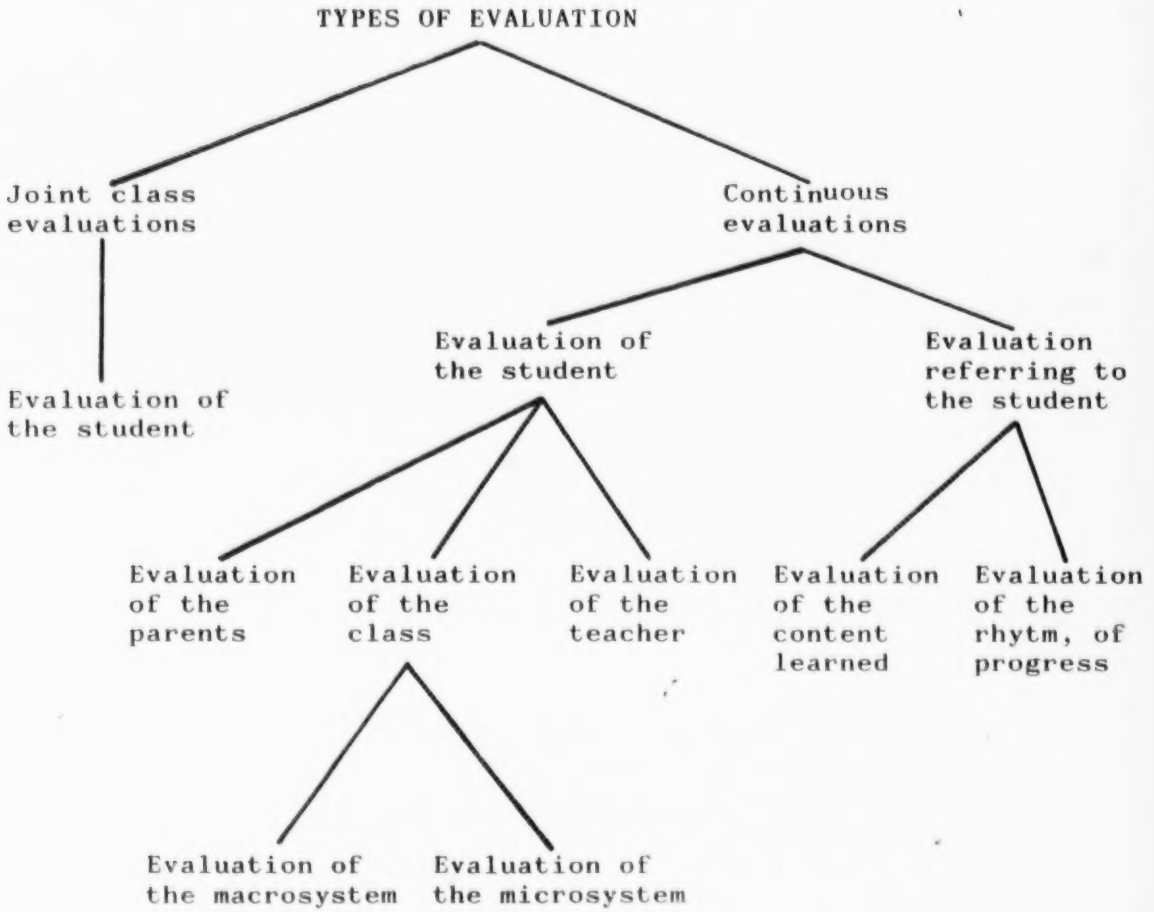
TYPES OF EVALUATION
Joint class evaluations
Continuous evaluations
Evaluation of the student
Evaluation of the student
Evaluation referring to the student
Evaluation of the parents
Evaluation of the class
Evaluation of the teacher
Evaluation of the content learned
Evaluation of the rhytm, of progress
Evaluation of the macrosystem
Evaluation of the microsystem

FIGURE 2. Taxonomy showing the two parallel systems of evaluation identified by the teacher.

FIGURE 3

Stages in continuous evaluation	The first thing I do when the children arrive	Try to talk to them			
		Take them on a field trip	Try to have parents come along on trip		
		Talk to them one by one			
		Take notes on individual first impressions			
	Contrast my opinions well	I get an idea of	what they are like		
			who is with whom		
			who can help whom		
			whom I must address	You see how to deal with each one	
			whom I must help conquer shyness		
			what they know	You also see their knowledge as we review earlier concepts	Practice reinforcement in learning (let's see if you remember...x...)
		Contrast my opinions with those of other teachers			
	I revise everything				
	I prepare a plan of action				
	Continuous Observation	Be continuously attentive to them to see	if they're doing their work if they're resolving their problems		
		Every day, you see their learning rhythm	You make up your programs to adapt to that rhythms		
		You keep facing questions as they come up			

Figure 3. Taxonomy of the stages in continuous evaluation.

FIGURE 4

I. THE FIRST THREE OR FOUR MONTHS WHEN I STARTED TEACHING MATHEMATICS.

A. Every time I changed from one theme to another I gave them a sort of test

--obtain graphs on major themes of the term

B. Gave a test that more or less followed what I was teaching and measured the term's contents

1. obtained general graphs

2. commented on results with parents

--parents gave solutions for sub-standard students

3. elaborated information sheet

II. 1984-'85 SECOND TERM (JAN.-MAR.)

A. Elaborated attitude measuring scale

--prepare effort & interest tables by grade level & subject matter

B. Every time I changed from one theme to another I gave them a sort of test

--obtained the term's major themes

C. Gave a test that more or less followed what I was teaching and measured term's contents

--obtained general graphs

III. AT THE END OF THE YEAR

A. With each student, I discussed interest and effort developed

B. Final grade for Scholastic Record

C. Reach conclusions
D. Give Report
E. I don't worry about anything else

Figure 4. Taxonomy of the stages in joint class evaluations.